



Examining correlation between lightning activity, rainfall and flash flooding. A case study in the island of Crete.

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Flash floods can seldom be predicted and therefore any new evidence regarding the occurrence of events can be useful for their mitigation. The present study reports the possible relationships between lightning activity and high precipitation related to flash flood events. In this study an attempt was made to correlate the lightning number and location, recorded by the ZEUS lightning detection system with the rainfall characteristics for sixteen rain events (4 flood and 12 non-flood events) in the island of Crete, during the period 2008-2009. Spatiotemporal analysis of rain and rain rate with flash count was performed with respect to distance (radius) of flashes from raingauge location at various temporal scales, in order to examine the correlation of accumulated rainfall and lightning activity. Results show increased lightning activity occurring during flood triggering storms. Furthermore, there is evidence that the number of flashes that occur during a precipitation event is related to precipitation depth when the latter is adequate to produce a flood event. Differences between flood and non-flood producing storms need to be further assessed by analyzing more independent parameters, including the synoptic conditions and dominant flash flood hydrological generating processes.